6-1974

Phase I Construction Plans and Contract, June 14th, 1974

University of Texas at Tyler

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June 18, 1974

Board of Regents
Tyler State College
100 E Berta Street
Tyler, Texas 75701

Re: Review of Building Plans
Tyler State College, Phase 1

Gentlemen:

Please refer to my letter dated June 17, 1974, concerning my review of the Building Plans for Tyler State College, Phase 1. In my letter under the section of "Materials" I expressed concern about the use of "Sarabond" Masonry.

Since the date of my letter I have talked with several persons who are familiar with this product including Mr Herb Slaven of Dee Brown Masonry Contractors who has actually installed "Sarabond" brick panels on a number of local projects. I now feel that the questions outlined in my report have been satifactorily answered and am confident that brick panels can be constructed using "Sarabond" motar without undue difficulty and that the panels will perform satisfactorily when installed.

Yours truly,

John G Carver

John G. Carver, P.E.

JGC bc

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June 17, 1974

Board of Regents
Tyler State College
Tyler, Texas 75701

Re: Review of Building Plans
Tyler State College, Phase 1

Gentlemen:

I have this day completed a review of the proposed construction plans for Tyler State College, Tyler, Texas. My review was made so that I might make recommendations to the Board concerning the design approaches used by the Project Architect-Engineer. In making this review I assume that I have not been employed to criticize the work of the Project Architect-Engineer but rather to act as a Technical Adviser to the Board.

I have limited my review to the following main categories:

1. Foundation System
2. Structural Framing System
3. Materials

The report herein follows this outline.

FOUNDATION SYSTEM

It is evident from reading the Soil Report that excellent foundation conditions exist over the entire site. Exceptionally high bearing values are recommended for both drilled piers and spread footings which provides an opportunity for real savings to be made in the foundation system. The Engineer appears to have closely followed these recommendations for each building in his design.

In both the Sciences and Mathematics Building and in the Student Center Building I believe a potential problem exists in that the building loads are carried on both drilled piers and spread footings. Even though in some cases this may be an attempt by the Engineer to support the loads on the same stratum I feel that it invites differential settlement. I suggest that all concentrated loads be carried on the same type footing at the same depth if possible.

Along the west wall of the Sciences and Mathematics Building and in all of the buildings I noted that the exterior walls are supported by a shallow grade beam poured monolithic with the floor slab. Because of the excellent soil conditions present and because of the relatively light loads being supported on this beam I believe this method is acceptable and most certainly economical.

In my opinion some savings can be made without any loss of structural integrity if the floor slab reinforcement is reduced to #3 bars @ 18" o.c. or to 6 x 6 x 8/8 welded wire fabric in place of the #4 bars @ 18" o.c. as specified. An option is allowed in Note 3.2, Sheet S-17 but it is too rigid to allow a savings.

The vertical steel shown for the drilled piers also seems to be excessive. Most Engineers use 0.50% to 0.75% of the pier shaft area to select the vertical steel required for piers. The piers are not columns and donot require the 1% minimum steel required by the ACI Building Code.

Throughout the plans I found interior masonry walls bearing on the 4 inch concrete slab. I do not believe this is in good practice and recommend that a 12 inch wide by 8 inch deep thickened slab be provided under all interior masonry walls. These thickened slabs should be reinforced with 2-#4 bars in addition to the normal slab reinforcing.

The Specifications call for construction joints in the floor slab to be installed as indicated on the drawings or as approved by the Architect. I did not find the construction joints shown on the plans but I suggest that slab pours be limited to about 1000 square feet with a maximum dimension of 50 feet. The buildings are laid out with natural modules of 30 to 40 feet which are excellent locations for locating construction joints.

Naturally, I have not actually verified the design calculations for the foundation system but, in general, I can find no serious objections to the plans presented except for the use of different footings in the same building.

STRUCTURAL SYSTEM

The selection of a Component Open-Web Girder and Purlin System with Tube Columns offers many advantages in economy, versatility and in the mechanical system layout. This approach is not unusual and is widely accepted. However, at a time when delivery and availability are constant construction problems I question the wisdom of the exclusive selection of a system which restricts the number of suppliers particullarly of such a crucial item as the structural framing. Although at this late hour it may seem merciless, it seems to me that a project of this size should have structural drawing presenting a complete conventional

framing system with rolled beams and bar joist with an option for the Open-Web Component System. The option, of course, would be selected if cost and/or delivery were superior to the conventional system.

The roof and floor deck materials are not specified very well on the plans. It would seem that local suppliers would be more likely to be interested in the project if standard materials such as "Tufcor" and Type "A" metal deck were called for. The plans should also specify the reinforcement to be used in the 4 inch concrete floor slab at the second and third floor areas.

MATERIALS

In my review I have made no attempt to study the architectural materials specified unless they were in some way affecting the structure.

The only problem area I have questions about is in the use of high bond "Sarabond" masonry. This product is very new as far as applications in the Sothwest are concerned. I personally have had no experience with the product although it was proposed on one of my recent projects but discarded when the contractor, Henry C. Beck Company, objected to its cost.

My concern about the use of this product can be summarized in the following questions:

1. Is the product approved for use by the Southern Building Code.
2. How is waterproofing achieved when the interior wall materials are attached directly to the brick panels as detailed on the architectural drawings.
3. What effect will age have on the bonding properties of the motar.
4. What quality of workmanship can be predicted when no contractor in the Tyler area has had experience with this type construction.

CONCLUSION

Although I have a number of items in this report my review has been very general. Undoubtedly, I could find many areas on a project this size which need additional attention by the Architect and Engineer, if time was available. In this report I have tried to call to your attention some major questions relating to safety and economy. I will be available to the Board to assist in any way that I can be helpful.

Respectfully submitted,

John G. Carver, P.E.

JGC/bc